AMSAT News Service Weekly Bulletins
Issue: ANS-335
Date: 2019-12-01
Sources: amsat-ans-2019-ans-335-weekly-hyperkitty-90c657feaf.txt

---

AMSAT NEWS SERVICE
ANS-335

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

You can sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see:
http://www.amsat.org/mailman/listinfo/ans

In this edition:

* AMSAT Fox Leaderboard Will Show Monthly Leaders
* AMSAT Will Be at Superstition Superfest Hamfest
* Electron Booster on the Pad for Rocket Lab’s 10th Mission
* FCC Seeks to Clear Radio Amateurs Out of 3.4 GHz
* WRC-19 Final Report: Small Satellites and the 1240-1300 MHz Band
* AMSAT Auction Celebrating 45th Birthday of AO-7 Raises $480
* Upcoming ARISS Contact Schedule
* Upcoming Satellite Operations
* Satellite Shorts From All Over

SB SAT @ AMSAT $ANS-335.01
ANS-335 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 335.01
>From AMSAT HQ KENSINGTON, MD.
DATE 2019 Dec 01
To All RADIO AMATEURS
BID: $ANS-335.01

AMSAT Fox Leaderboard Will Show Monthly Leaders

Starting from Nov. 26, the AMSAT Fox Telemetry leaderboard will now show MONTHLY totals. The top stations will be those that have submitted the most telemetry in the last 30 days. The old style leaderboard can be accessed by clicking "All-time Leaderboard" to see totals since the launch of Fox-1A. To see more than the top 10 stations, click on "Show all ground stations" to see everyone.

The leaderboard has also been updated to show PSK frames decoded alongside FSK frames. DUV and Highspeed are both counted but are not shown separately on the totals page.

HuskySat-1 is now at the ISS on the Cygnus. We expect it to be boosted to its target orbit in the new year. It will transmit BPSK telemetry continuously on 70cm, so dig out that 435Mhz antenna and make sure it

works! Fox-1E will follow in the (hopefully near) future and will also transmit PSK on 70cm.

As with previous spacecraft, the telemetry collected is sent to our University Partners who fly experiments and help make these missions possible. Please collect and forward telemetry if you can.

The link to the leaderboard is: https://www.amsat.org/tlm/

If there are questions, contact Chris Thompson, G0KLA/AC2CZ via email: g0kla <at> arrl.net

(ANS thanks Chris Thompson, G0KLA/AC2CZ for the above information)

+=+=+=

is 52-0888529.

+=+

Electron Booster on the Pad for Rocket Lab’s 10th Mission

Rocket Lab has announced that its next mission will launch multiple microsatellites in a rideshare mission representing five different countries. The launch window for Rocket Lab’s tenth flight, will open November 25, New Zealand time, and take place from Rocket Lab Launch Complex 1 on New Zealand’s Mahia Peninsula.

Onboard this rideshare mission are six spacecraft comprised of 5cm PocketQube microsatellites from satellite manufacturer and mission management provider Alba Orbital. Two of these satellites include downlinks in the UHF amateur radio band.

TRSI is a PocketQube for technology demostration. Its main objective is to show which functionality can be achieved with dimensions of 5cm x 5cm x 5cm. It carries two experiments that are connected to the amateur-satellite service.

+ First is a waterfall experiment which will show an image in the waterfall diagram by hopping the frequency within its transmission band (image-type beacon).

+ The second experiment is to analyze RF reception capabilities from LEO with a novel detector receiver and a small patch antenna. It was designed to test if small satellite receivers which don´t need deployable antennas are feasible. The received signal´s envelope will be sampled and forwarded using UHF in MFSK for signal analysis. During the experiment phase the satellite will also perform as an amateur CW repeater, providing additional RX strength indication; eg. CW morse signals will be re-sent in MFSK, showing the RX amplitude in dBm. A downlink on 437.075 MHz has been coordinated.

IARU Frequency Coordination information has been posted at:
http://www.amsatuk.me.uk/iaru/finished_detail.php?serialnum=649

FossaSat-1 PocketQube by AMSAT-EA which has a 5x5x5cm structure and a total mass of 250 grams. Radio link testing features a new experimental RF chirp modulation called LoRa which greatly improves the link budget reducing the power consumed and reduces the cost of receivers.

The output power from the transmitter required for the correct reception during a pass is also very low at well under 100mW, being spread spectrum at such low power it poses no interference risk. It operates at a considerable level below the noise level of other systems and would cause no interference to weak narrowband signals.

Students & amateurs will be able to receive telemetry from the satellite with inexpensive hardware, expanding & promoting the amateur satellite community with youth. Uplink challenges will also be carried out with rewards for amateurs.

The mission is completely open source with all information regarding the design of the satellite & how to decode its information clearly laid out & hosted by AMSAT-EA. The site will provide decoding software for SDR use in order to allow anyone to decode LoRa using common existing hardware & host software for users to submit telemetry data, making all data public and rewarding users with certificates & awards. The UHF downlink plans on using FSK RTTY 45 BAUD ITA2, 100mW 183hz Shift and LoRa 125kHz, Chirp Spread Spectrum Modulation, 180 bps, 100mW. A downlink on 436.700 MHz has been coordinated.

IARU Frequency Coordination information has been posted at:
http://www.amsatuk.me.uk/iaru/finished_detail.php?serialnum=652

A commercial payload on board is ALE-2 from a Tokyo-based company creating microsatellites that simulate meteor particles. See http://star-ale.com/en/news/317/2019/01/04/ for more information.

Rocket Labs mission web page can be found at:
https://tinyurl.com/y672rjj5

[ANS thanks Rocket Labs, IARU, AMSAT-EA, TRSI, and Alba Orbital for the above information]

+=+=+=

FCC NPRM asks whether existing amateur spectrum in other bands might support operations currently conducted in the 3.3 – 3.5 GHz band. The 3.40 – 3.41 GHz segment is designated for amateur satellite communication. “We seek comment on the extent to which the band is used for this purpose, whether existing satellites can operate on other amateur satellite bands, and on an appropriate timeframe for terminating these operations in this band,” the FCC NPRM says.

Also at its December 12 meeting, the FCC will consider another NPRM in WT Docket 19-138 that would “take a fresh and comprehensive look” at the rules for the 5.9 GHz band and propose, among other things, to make the lower 45 MHz of the band available for unlicensed operations and to permit “Cellular Vehicle-to-Everything” (C-V2X) operations in the upper 20 MHz of the band. The FCC is not proposing to delete or otherwise amend the amateur allocation, and it would continue as a secondary allocation, but the primary allocation for 5.850 – 5.925 GHz would change.

The amateur radio 5-centimeter allocation is 5650.0 – 5925.0 MHz, and the NPRM, if approved, would address the top 75 MHz of that amateur secondary band. While no changes are proposed to the amateur allocation, anticipated more intensive use by primary users could restrict secondary amateur use.

The band 5.850–5.925 GHz has been reserved for use by dedicated short-range communications (DSRC), a service in the intelligent transportation system (ITS) designed to enable vehicle-related communications, the FCC said in a Fact Sheet in WT Docket 19-138. “The Commission initiates this Notice of Proposed Rulemaking to take a fresh and comprehensive look at the 5.9 GHz band rules and propose appropriate changes to ensure the spectrum supports its highest and best use.” ARRL also will file comments opposing any changes affecting the 5-centimeter amateur allocation.

Both draft FCC proposals are subject to change prior to a vote at the December 12 FCC meeting, and there will be opportunity to file comments and reply comments on the final proposals after they are released.

[ANS thanks ARRL for the above information]

WRC-19 Final Report: Small Satellites and the 1240-1300 MHz Band

In the final week, the meetings at WRC-19 have been running until 3 in the morning in an attempt to get the work completed.

The RSGB have released their WRC-19 report covering small satellites and also the Amateur 1240-1300 MHz band.

The report notes “A lesson from the process indicates how difficult it may be in future to achieve any upgrade to other amateur allocations.”

Read the RSGB Small Satellites and 23cm report at
https://tinyurl.com/vjfho66

Friday, November 22 saw WRC-19 conclude its month long biggest ever conference. Many of the 3,300 delegates had started to travel home even before the release of the ‘Provisional Final Acts’ and closing ceremony.

The ITU website has released the provisional acts as a huge 567-page PDF document–a tribute to the the hardworking editorial and transla-

tion teams at the conference. These provisional acts are due to come into force on January 1, 2021, so no early changes are currently expected in practice.

Read the RSGB WRC-19 Final report at https://tinyurl.com/qjw9kvd

WRC-19 Provisional Final Acts – a 567 page document - is available at https://tinyurl.com/tyzfvl3

[ANS thanks AMSAT-UK for the above information]

+-+

Need new satellite antennas? Purchase Arrows, Alaskan Arrows, and M2 LEO-Packs from the AMSAT Store. When you purchase through AMSAT, a portion of the proceeds goes towards Keeping Amateur Radio in Space.
https://amsat.org/product-category/hardware/

+-+

AMSAT Auction Celebrating 45th Birthday of AO-7 Raises $480

The auctions for a set of gold-plated AO-7 cufflinks and a 50th Anniversary AMSAT lab coat recently concluded and raised $480 to help Keep Amateur Radio in Space. Thank you to all of the bidders for participating in the auctions!

If you missed out on the auctions, but still want to help out, please consider donating or purchasing items from the AMSAT store at www.amsat.org today!

[ANS thanks Executive Vice President Paul Stoetzer, N8HM, for the above information]

Upcoming ARISS Contact Schedule

MAOU Lyceum No. 39, Nizhny Tagil, Russia, direct via TBD
The ISS callsign is presently scheduled to be RSØISS
The scheduled astronaut is Alexander Skvortsov
Contact is go for: 2011-11-30 14:15 UTC

Council Rock High School South, Holland, Pa., direct via KC3NGG
The ISS callsign is presently scheduled to be NA1SS
The scheduled astronaut is Drew Morgan KI5AAA
Contact is go for: Thu 2019-12-05 17:56:31 UTC 71 deg

B. Pascal Institute - Public School, Rome, Italy, direct via IKØMGA and Istituto Comprensivo Lipari “S. Lucia”, Lipari, Italy, direct via ID9GKS. The ISS callsign is presently scheduled to be IRØISS
The scheduled astronaut is Luca Parmitano KF5KDP
Contact is go for: Sat 2019-12-07 11:44:00 UTC 45 deg

For more information, the ARISS webpage is at https://www.ariss.org/

[ANS thanks Charlie Sufana, AJ9N, ARISS operation team, for the above information]

```
----------------------------------------------------------------------

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

   AMSAT, along with our ARISS partners, is developing an amateur
   radio package, including two-way communication capability, to
         be carried on-board Gateway in lunar orbit.
  Support AMSAT's projects today at https://www.amsat.org/donate/

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

----------------------------------------------------------------------

Upcoming Satellite Operations

Nunavut, Canada (ER60) November 11 - December 6, 2019
The Eureka Amateur Radio Club, VY0ERC, will be on station, the Polar
Environment Atmospheric Research Laboratory, November 6th through Dec-
ember 11th.  They have some house keeping duties to perform on arrival
and just before they leave, not to mention that it's wicked cold up
there (-25 to -35C not counting windchill), so keep an eye on the
VY0ERC twitter feed for announcements on when they plan to step out-
side: https://twitter.com/vy0erc

Key West (EL94) December 3-6, 2019
Tanner, W9TWJ, will be vacationing in Key West December 3rd - 6th. Key
word is vacation, but he will jump on some FM satellite passes to act-
ivate EL94 for those that need it or just want to chat. Watch Tanner's
Twitter feed for further announcements: https://twitter.com/twjones85

Key West (EL94) December 3-6, 2019
Tanner, W9TWJ, will be vacationing in Key West December 3rd – 6th. Key
word is vacation, but he will jump on some FM satellite passes to ac-
tivate EL94 for those that need it or just want to chat. Watch Tanner’s
Twitter feed for further announcements: https://twitter.com/twjones85

Hawaii (BK19, BK28, BK29, BL20) December 21-28, 2019
Alex, N7AGF, is heading back to Hawaii over Christmas. This will be a
holiday-style activation, with special empahasis on the grid that got
away - BK28. Keep an eye on Alex's Twitter feed for further announce-
ments: https://twitter.com/N7AGF

Please submit any additions or corrections to ke4al (at) amsat.org

[ANS thanks Robert Bankston, KE4AL, AMSAT VP - User Services, for the
above information]

----------------------------------------------------------------------

Satellite Shorts From All Over

+ NASA's "Ride to Station" App and Educator Guide equips educators with
  simple tools and knowledge to take a fun, interactive app and turn it
  into a powerful, educational tool for students of all ages! The in-
  teractive app gives an overview of the complexities involved in get-
  ting to and conducting research aboard the International Space Sta-
  tion. The app is also challenging and fun! The Commercial Crew Pro-
  gram focuses on working with NASA’s two partners Boeing and SpaceX
  to create American commercial capabilities to safely send humans to
  and from the International Space Station. For more information see:
  https://tinyurl.com/vj9gyfr
  (ANS thanks NASA for the above information)
```

+ Rovers and some multiop VHF/UHF contest stations will be interested in the future Down East Microwave DEM V/U Xverter. This device covers ALL 5 OF THE AMATEUR BANDS between 144 MHz and 1.2 GHz. According to the preliminary information from the manufacturer: "All frequencies convert to/from 28 MHz. The transmit output level is approximately 1 watt and will exhibit a 2 dB noise figure with greater than 15 dB gain on all bands. The Transverter will also contain an AUX RF port that will be configured as an additional 2M port for connection to a higher frequency transverter such as our future DEM MICRO-VERTER containing 4 additional higher bands of operation."
(ANS thanks Pete Heins, N6ZE, the Pacific NorthWest VHF Society, and www.downeastmicrowave.com for the above information)

+ Rocket Lab has partnered with Kongsberg Satellite Services (KSAT) to be the sole provider of ground station services for the Electron launch vehicle and Photon satellite bus customers. KSAT's KSATlite ground network is designed and optimized for small satellite systems, providing Photon customers with downlink and uplink capabilities in UHF, S-band, X-band, and Ka-band across a global ground station network of over 200 antennas that supports 50,000 contacts per month.
(ANS thanks SatMagazine.com for the above information)

+ NASA Kennedy Space Center (KSC) will be testing an improved waveform on the 48-MHz Tropospheric Doppler Radar Wind Profiler (TDRWP) from Monday, November 25 through Sunday, December 2. The purpose of the test is to improve the instrument's resolution and still operate within the assigned bandwidth. NASA is requesting the amateur radio community to report via email to ksc-tdrwptest(a)mail.nasa.gov any detected emissions in the 50 – 54 MHz band dur ing that period. Include the date, time, location, frequency, and any other pertinent information (such as IQ files of the signal for evaluation) that might assist NASA in assessing potential impacts to the amateur radio community.
(ANS thanks ARRL for the above information)

+ NASA commercial cargo provider SpaceX is targeting 12:51 p.m. EST Wednesday, Dec. 4, for the launch of its 19th resupply mission to the International Space Station under contract with the agency. Live coverage will begin on NASA Television and the agency's website Tuesday, Dec. 3, with prelaunch events. The Dragon spacecraft, which will launch from Space Launch Complex 40 at Cape Canaveral Air Force Station in Florida, will be filled with supplies and payloads, including critical materials to directly support dozens of the more than 250 science investigations and technology demonstrations that will occur during Expeditions 61 and 62.
(ANS thanks NASA for the above information)

+ Jerri Ellsworth, AI6TK, who was the AMSAT/TAPR guest speaker at Dayton in 2018, was featured as a "technology visionary" by the New York Times in an article first published in October, but highlighted once again in a series wrap-up on Nov. 26. Those who have a N.Y. Times online account can access the story at https://tinyurl.com/tmkhqaq

+ ANS wishes a happy Thanksgiving holiday weekend (or what remains of it) to all U.S. satellite operators!

/EX

In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive addi-

tional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73 and Remember to help keep amateur radio in space,
This week's ANS Editor,

K0JM at amsat dot org